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Bioaffine methods for determining ajmaline using an amperometric DNA-sensor and an immunoenzyme spectrophotometric test system

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Abstract

Bioaffine methods are developed for determining indole-containing alkaloid ajmaline, which has a cytostatic effect and is used as a cardiac drug. These methods are based on the proposed amperometric DNA-sensor and on immunoenzyme test system with the spectrophotometric indication of the analytical signal. The complex formation between ajmaline and immobilized native DNA allows ajmaline to be efficiently preconcentrated on the biosensor from test solutions. Optimum conditions for preconcentrating ajmaline and those for reactivating the biosensor for its repeated use are found. The time of analysis is 25-30 min, the determination limit for ajmaline is 3.0 × 10-10 M (RSD = 33%). In the test system, the immunological reaction of ajmaline with its antibodies and the enzyme marker, horseradish peroxidase, are used. The determination limit is 4.0 × 10-9 M (RSD = 33%). Ajmaline is determined by the two methods in model solutions of blood serum and in tablets and solutions for injections. © 2009 Pleiades Publishing, Ltd.

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